

SECRET

Approved For Release 2002/06/17 : CIA-RDP78B04747A002700040004-5

R & D CATALOG FORM		DATE 1 March 1965	25X1
1. PROJECT TITLE/CODE NAME [ ] Vacuum Easel Development		2. SHORT PROJECT DESCRIPTION Development of a vacuum easel for the [ ] Enlarger.	
5. CLASS OF CONTRACTOR Manufacturer		6. TYPE OF CONTRACT CPFF	
7. FUNDS FY 19 \$		8. REQUISITION NO. NA	
FY 1965 [ ]		10. EFFECTIVE CONTRACT DATE (Begin - end) 25X1	
FY 19 \$		March 1965 - June 1965	
12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION DDI/NPIC/P&DS, [ ]		25X1 25X1	
13. REQUIREMENT/AUTHORITY This development will permit the use of printing paper, with its inherent edge-curl problems, on the [ ] Enlarger without the necessity for weights, masks, etc., to secure the paper. The requirement for the project was (Contd)			
14. TYPE OF WORK TO BE DONE Engineering Development		25X1	
15. CATEGORIES OF EFFORT			
MAJOR CATEGORY Reproduction and Processing Equipment (Equipment Modification)		SUB-CATEGORIES# Interpretation/Analysis	
16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC. The contract will result in one prototype easel to be installed on existing equipment. The improved easel will enable the operator to place photographic printing paper on any area of the vacuum easel and the paper will be automatically held flat.			
17. SUPPORTING OR RELATED CONTRACTS (Agency & Other)/COORDINATION From contacts throughout industry and the intelligence community, it has been determined that no other development of this type is presently underway.		25X1	
18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT (Continue on additional page if required) The present [ ] easel requires the use of weights to flatten and hold printing paper during the exposure cycle. The consequent procedure is very time-consuming and ineffectual, particularly when over-sized paper is utilized. The development of the vacuum easel for the [ ] will eliminate this problem. 25X1 NPIC proposes to investigate, design and fabricate a vacuum easel employing the principles described in an attached document entitled "Brief Description of Invention" by [ ] DB/PDS. It is evident from the description that the principles have not been developed to (Contd)			
19. APPROVED BY AND DATE			
OFFICE	DEPUTY DIRECTOR	DDCI	25X1
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Declass Review by NIMA / DoD

R & D CATALOG FORM (continued)

13. levied by NPIC/PSD.

18. full potential. Although a crude and workable easel could easily be built from the invention description as it now stands, it is more important to detail the application by establishing the best method of implementation. The best method will only result from a thorough analysis of the pneumatic principles involved and should result in a unique and vastly superior vacuum easel.

Specific objectives to be accomplished under this development are as follows: the vacuum easel shall

- A. hold flat all conventional weights of printing paper.
- B. permit easy positioning of the printing paper on the format.
- C. provide rapid vacuum "take down".
- D. permit rapid vacuum release.
- E. permit rapid hold-down without creating "dimples" or other blemishes on the paper.
- F. place material in the same focal plane as the present easel's.
- G. hold down all sizes of printing paper without regard to position on the easel format and without the use of masks etc.

A Development Objective was written for this project and proposals were solicited from [ ] local companies. Only local companies were invited because it was necessary to brief each company on the new techniques after having them sign patent disclosure papers.

[ ] After considerable weighing of technical and monetary considerations, it was decided that we are obliged to select the [ ] proposal for the following reasons:

1. This easel incorporates a new and unique vacuum hold-down technique which promises a break-through in vacuum platen technology; however, it has never been implemented before and the techniques of fabrication and the exact pneumatic principles involved are not known in detail. A comprehensive theoretical investigation of these problem areas by competent engineers will be required prior to an attempt to implement this system: [ ] has the necessary engineering staff,

R & D CATALOG FORM (continued)

18.

25X1

2. [ ] proposal indicates a fundamental understanding of the problem areas involved [ ]

25X1

25X1

3. [ ] proposal elucidates some superior design and fabrication features: e.g., they plan to use a special casting to provide internal support to the vacuum surface thereby increasing rigidity and assuring optical flatness of the printing surface. To the contrary, [ ] proposes to use sheet metal construction: optical considerations should obviate this approach.

25X1

25X1

25X1

4. [ ] attempted to produce a vacuum easel for this same enlarger and was totally unsuccessful, resulting in a loss to the agency [ ] They were invited to propose again only because it was feared that few local companies would be interested in a contract for such a small modification and that we might have to consider them as a last resort.

25X1

5. It is our opinion [ ] has vastly underbid, the contract and is incapable of producing the device we want.

25X1

[ ] has far superior engineering capabilities, a highly competent technical staff, and offers the best technical approach in their proposal, they were selected as the potential contractor.

Although the proper security measures are not in effect at the contractor's plant, the necessary company officers have Agency secret clearances.

BRIEF DESCRIPTION OF INVENTION



This invention consists of a system of manifolds and valves coupled to a porous platen in such a way that a vacuum applied to a manifold on one side of the valves will be automatically masked or cut-off by these valves except in those areas where a relatively non-porous material has been placed on the opposite side of the platen. In that case, the covered valves automatically open and allow the vacuum to be applied to the substance placed on the platen. By this means a vacuum platen of relatively large area can be automatically masked so that it will effectively exert the system's full capacity on flat materials placed on the platen even though a relatively small portion of the platen is covered by the material.

This automatic masking is accomplished in the following manner:

- (1) The platen is honey-combed with individual identical cells.
- (2) In the accompanying drawing these cells are joined at the bottom to a manifold (A), to which a vacuum pump is attached.
- (3) Each cell consists of an automatic control or governor valve (in the drawing illustrated by a flat spring or reed valve, (B) pierced by a small by-pass port, b, and leading into individual small manifolds, (C).
- (4) Those manifolds are covered by a flat porous platen, (D). (Closely spaced, small holes would also be satisfactory.) The porosity of the platen is such that it will support relatively flimsy material without deformation. Yet, when uncovered, it will allow adequate flow of air causing the control valve to close, and thus reducing the flow to that allowed by the by-pass port.
- (5) In the instance that a relatively non-porous substance, (E), is placed on the platen, the flow of air is restricted and the leakage of the by-pass port allows the pressure in the upper and lower manifolds to equalize.

This will, in turn, cause the control valve to open, thereby allowing a greatly increased flow to pull and hold the substance down on the platen.

This automatically masked vacuum platen should have extensive application in a number of situations whenever it is necessary to hold flat-sided objects in place with forces not exceeding that of atmospheric pressure. Also, the objects may vary in size and shape with respect to the platen on which they are held in place. Some examples of these applications are:

- (1) Photographic cameras, enlargers, copy boards, printers, etc.
- (2) Coordinatographs, automatic point and line plotters, stereo plotters, drafting boards.
- (3) Model shops for holding work on shaping tables, drill presses, etc.
- (4) Optical shops for handling glass prisms and plates, etc.

25X1 This invention was conceived in the course of official duties. An assignment had been given [redacted] to define objectives for the development of a vacuum easel needed for photo-enlargers [redacted] to initiate and monitor this development through a contract with industry. 25X1

25X1 In the course of this development [redacted] of holding down miscellaneous sizes of double-weight print paper. In the course of this discussion the idea for the Automatically-Masked Vacuum Platen was conceived. Subsequent component research and discussion refined the idea into the invention described herein. 25X1

25X1 [redacted] responsible for initiating and monitoring development contracts with private industry. Whereas they are expected to contribute to such development, evaluation of a complete, specific invention such as this is not among their assigned responsibilities.

*AUTOMATICALLY-MASKED VACUUM PLATEN FOR RECORD  
OF INVENTION DATED 14 DECEMBER 1962*

